which he took to obtain some of the water for the purpose of bringing it home to England and submitting it to a chemical test.

"The sea was covered with so brilliant a surface of silver light that we could see to read, and the shadows of ropes, &c. were strongly marked. We sailed through it for about four hours. In one place it had an edge; and we sailed out of it for nearly half an hour, when we again entered it as abruptly, and finally left it, when the edge of the illuminated part was strongly defined. The water was taken up in a clean bucket and put into a carefully cleaned bottle; about 10° north latitude."

As Captain Wilmot's time in England was limited, he left the bottle of sea water with me, and I took the first opportunity of showing it to Dr. Faraday, who took it to London with him, and wrote me a note, of which the following is a copy.

"Royal Institution, September 25th, 1843.

"Dear Sir,—I have examined the water, and it is peculiar in some points. It contained much sulphuretted hydrogen, and also a portion of solid deposit, which was about one half sulphur and the other half organic matter. There has no doubt been considerable change in the contents of the water, and I cannot now recognise organic forms; but the presence of the animal matter, the sulphur, and the sulphuretted hydrogen, all agree with the idea that the water, when taken up, was rich in animals or animalculæ.

"I am, Sir, yours very truly,

"*Lieut. Dixon, R.N.*, &c., &c." "M. Faraday."

I remain, Sir, yours very truly,

Professor Christie,
Royal Military Academy, Woolwich.

W. Manley Dixon.

November 30, 1843.

At the Anniversary Meeting,

The MARQUIS OF NORTHAMPTON, President, in the Chair.

Dr. Robert Lee, on the part of the Auditors of the Treasurer's Accounts, reported, that the total receipts during the last year, inclusive of a balance of 1143*l.* 3*s.* 5*d.*, carried from the account of the preceding year, amounted to 4454*l.* 15*s.* 10*d.*; and that the total payments in the same period amounted to 2460*l.* 8*s.* 9*d.*, leaving a balance in the hands of the Treasurer of 1994*l.* 7*s.* 1*d.*

The thanks of the Meeting were given to the Auditors for the trouble they have taken in examining the Treasurer's Accounts.

The thanks of the Meeting were given to the Treasurer.

The Secretary then read the following lists of deceased Fellows

of the Royal Society, and of those admitted into the Society since the last Anniversary in 1842.

List of Fellows of the Royal Society deceased since the last Anniversary (1842).

On the Home List.

Robert Alexander, Esq.
Andrew Baird, M.D.
Thomas Botfield, Esq.
Richard Drew, Esq.
Rev. Henry Drury.
Lovell Edgeworth, Esq.
James Frank, M.D.
William Vesey Lord Fitzgerald and Vesey.
George Earl of Glasgow.
John Latham, M.D.
Charles Macintosh, Esq.
John Delafield Phelps, Esq.
H. R. H. the Duke of Sussex.
Archdeacon Francis Wrangham.

On the Foreign List.

Alexis Bouvard.

List of those who have ceased to be Fellows in default of their Annual payments.

Captain William Allen, R.N.
Marshall Waller Clifton, Esq.
Captain Arthur Conolly.

List of Admissions into the Royal Society since the last Anniversary (1842).

Charles Townley, Esq.
Duke of Norfolk.
Augustus F. B. Creuze, Esq.
Capt. Samuel T. Widdrington.
John Gould, Esq.
Sir Benjamin Heywood, Bart.
Edward Solly, jun., Esq.
John Benjamin Heath, Esq.
James MacCullagh, Esq.
George Owen Rees, M.D.
James Meadows Rendal, Esq.
John Miers, Esq.
W. Brooke O'Shaughnessy, Esq.
Joseph Miller, Esq.
Henry Wollaston Blake, Esq.
James Heygate, M.D.
George Basire, Esq.
Colonel Le Coutour.
James Tulloch, Esq.
James Moncrieff Arnott, Esq.
Samuel Elliott Hoskins, M.D.
Sir John Boileau, Bart.
Rev. John Wright.

The President then addressed the Meeting as follows:—

Gentlemen,

In addressing you on the present recurrence of our Anniversary, I have to make the same acknowledgment to the Council which has assisted me during the past year, that I have had to make to their predecessors. If your affairs have proceeded prosperously, it has been mainly owing to their unremitted exertions. Since our last Anniversary, there are not many events to which it will be my duty to refer. The first that I shall bring under your notice is one of the most gratifying description—the return of Captain James Clark Ross, and the vessels under his orders, from the Antarctic regions of

the globe. This expedition, undertaken by the Government in a great degree on the recommendation of the Royal Society, has returned after almost entire success. I trust that the account of this most interesting voyage will be given to the public by its gallant commander, who has approached to both limits of the world. A portion of its valuable scientific details has been already given to our Society; and the magnetic observations made by Captain Ross and his officers, with so much assiduity and ability, will be the enduring monument of their fame, as long as industry and science are held in honour by mankind. The magnetic maps of the South Polar regions will be a result which all philosophers must hail with delight, while the geographer will rejoice in the advancement of our knowledge so far to the southward of all former navigation, and in our acquaintance with a new polar volcano, compared to which Hecla sinks into insignificance.

It is a great addition to our pleasure on this occasion, that so few casualties have happened during the three years' absence of Captain Ross and Captain Crozier from England, and that no officer or sailor has been a victim to disease, except one seaman who died on the homeward passage. This, when we reflect on the length of time to which the expedition extended, and the severity of the climate that it had to face, is no small tribute to the care of the commander of the two vessels employed, and the skill of the surgeon, to whom the health of those on board was committed. When we advert to the dangers that the vessels were exposed to, from the icy barriers of these new-found regions of the earth, we cannot be sufficiently grateful to Divine Providence for having preserved lives so valuable to their country, and so dear to every lover of science.

During the last year the Society has lost few of its members. Only one of its foreign ornaments has it lost, M. Bouvard, a distinguished astronomer. The number of those who contribute to our Transactions is not at all lessened. We have, however, to lament the death of an illustrious Prince, who for several years presided over our body, and whose regard for us remained undiminished to the last. On this occasion we felt it our duty to lay before the throne the expression of our respectful condolence with our Royal Patroness, on the death of her illustrious uncle; and we also suspended our Meetings, to mark our sense of the loss that we, as well as the public, had sustained.

The Council, in pursuance of its duty, has awarded the Royal Medals to Professor Forbes of Edinburgh and Professor Wheatstone of King's College, and the Copley Medal to Professor Dumas. I regret extremely that I cannot bestow the latter on our illustrious colleague in person. His presence to-day would be truly gratifying to us all. I still more regret the absence of Mr. Forbes, as it is owing to ill health that he is still on the continent. I must therefore request Mr. Christie to transmit the Medal to his friend.

Mr. Christie,

In the absence of Professor Forbes, I must request you to receive

for him this Medal, which is the second that has been given to him by the Royal Society. In awarding it to his researches on the law of extinction of the solar rays, the Council have not alone been guided by their own sense of the author's merits, but also by a detailed report with which Sir John Herschel has favoured them*. As

* Sir John Herschel's report, above referred to, is as follows:—"Mr. Forbes's paper, as far as my knowledge extends, records the first attempt, and that in no slight degree successful and satisfactory (considering the very great complexity of the physical considerations it involves and the difficulty of the experiments themselves), to obtain a positive measure of the extinction of solar heat (as distinguished from light), in traversing a measured portion of the atmosphere, and that one, of which the meteorological conditions have been carefully ascertained at the two extremes, and therefore in which the nature and density of the medium traversed within their limits have been determined by direct observation as well as such data can be ascertained at all on the great scale. For this purpose, simultaneous observations are indispensable; and in the choice of a coadjutor, Mr. Forbes must be allowed to have been highly fortunate. The rarity of opportunities for such observations to be made with any prospect of a dependable result, I am satisfied, from my own experience, is by no means overstated by Mr. Forbes. That of which he availed himself seems to have been as nearly unexceptionable as could have occurred, and to have been used with all regard to the obtaining a precise knowledge of the meteorological particulars capable of influencing the result. In such cases a single series under unexceptionable circumstances thoroughly worked out may and must afford results far more valuable than any number of series obtained on less select occasions.

"The mode in which Mr. Forbes has analysed his own and M. Kämtz's observations on the Faulhorn and at Brientz, as well as the conclusions he deduces from them, are both in many respects remarkable. The method of graphical interpolation is resorted to throughout, and curves so deduced expressing at once to the eye and to the reason the simultaneous variations of all the meteorological elements at both stations, as well as the march of the actinometer. The comparison of these last curves leaves no room to doubt either the practical efficiency of the method of observation pursued, or the nature of the causes in action which give rise to the many remarkable and corresponding peculiarities which their forms exhibit, and which, as general affections of the *actinometric curve*, Mr. Forbes has examined and traced up to their origin in the combination of the sun's varying altitude, and the hygrometric changes induced on the column of air traversed by his rays, by the heat already developed. It is a curious and complex case of causation in which the direct and immediate effect of the cause is modified by an indirect one of a cumulative kind, resulting from the totality of its action from its commencement to the time of observation.

"The comparison of the hygrometric curves with the actinometric leads to no very distinct conclusion, though this is a point on which Mr. Forbes has bestowed great attention. A general but not very precise analogy is pointed out between the curve of mean dampness and that of relative extinction; but on the whole, no distinct relation is pointed out between *that dampness which affects the hygrometer* and that which disturbs the merely aerial extinction of solar heat—(if indeed simple dampness, as such, be the only or the principal disturbing cause).

"On the hypothesis of 'uniform opacity,' or that in which the extinction

this report will be printed I shall refer you to it, feeling that I could not, by anything that I might say, add to its effect on your minds. I must, however, be allowed to congratulate Mr. Forbes on these researches, as one of the fruits of his arduous and meritorious labours amid the eternal ice and snows of the loftiest region of Europe. Mr. Forbes is now fairly enlisted in that enterprising scientific band which looks up to De Saussure as its leader. His researches into the law of extinction of the sun's rays is but a portion of the valuable results that he has obtained among the mountain solitudes, where, though vegetation scarcely exists, and animal life is equally rare, the eternal glacier itself is ever pursuing its gradual and silent course:—silent, till it is interrogated by a philosopher endowed with the energy and perseverance of a De Saussure in the eighteenth, or a Forbes in the nineteenth century.

Mr. Wheatstone,

I now present you with this Medal, one of those entrusted to the President and Council of the Royal Society by Her Most Gracious Majesty, for your paper entitled "An account of several new Instruments and Processes for determining the Constants of a Voltaic Circuit." This is not the first time that I have had the pleasing task of acknowledging, on the part of the Royal Society, the great ingenuity as well as knowledge that you bring to the increase of science. You not only add to our store of knowledge, but you give to others the means of doing so too. You not only set the example of

varies in geometrical progression as the mass of air traversed varies in arithmetical, Mr. Forbes, calculating on the whole series of observations in question, concludes an extinction of 31½ per cent. of the incident heating rays in passing vertically through the atmosphere under the conditions of mean barometric pressure, and a dampness such as prevailed on the average during the day of observation, thus appearing to afford a confirmation at once interesting and unexpected of the results of Bouguer and Lambert, as deduced on a similar hypothesis, from their experiments on the extinction of light, though properly speaking it is impossible to argue from one case to the other.

"But Mr. Forbes adduces a great many considerations, both theoretical and practical, in proof that such a law of extinction cannot be that of nature—the incident heat being analysed in its progress, and so rendered relatively more transmissible after passing through a certain thickness of the medium than before it (a conclusion grounded on the discoveries of M. De la Roche, M. Melloni, and his own); and secondly, laying aside every theoretical consideration and obtaining from the series of observations under discussion an empirical formula, by means of an interpolating curve, expressing the rate of loss of intensity of a solar ray which has been transmitted through a varying atmospheric thickness, in traversing the stratum immediately subsequent, he finds for the result of this inquiry a rate corresponding to the ordinate of a logarithmic curve, having its asymptote not passing through the origin of the coordinates, and thence deduces the following remarkable conclusions, which, as a result of experiment and direct observation, I conceive to be of great interest, viz.—

"1st. The extinction of solar heat in traversing vertically an atmosphere *mechanically pure* and of mean barometric pressure, amounts to 0·466 of

scientific pursuit, but you also facilitate it in those who may become at once your followers and your rivals. In the particular case before us, you have introduced accuracy where even rough numerical data were almost wholly wanting. The importance of such facilities in any branch of science can hardly be overrated, and I have therefore the greatest satisfaction in being the channel of this award of the Council of the Royal Society.

Mr. DANIELL,

I have to request that you will take charge of this Copley Medal, and transmit it to M. Jean Baptiste Dumas, for his late valuable researches in Organic Chemistry, and more especially those contained in a series of memoirs on chemical types and the doctrine of substitution, and also for his elaborate investigations of the atomic weights of carbon, oxygen, hydrogen, nitrogen, and other elements. In bestowing this Medal, as awarded by the Council of the Royal Society for scientific labours so important, I may well feel the highest gratification*.

the total incident heat at least, and may be even much greater; so that the absolute intensity of the solar ray, or such as it has exterior to our atmosphere, would appear to have been considerably under-rated.

"2nd. The extinction of heat in a *mechanically pure* atmosphere has a limit, and beyond which it might traverse any, at least a very great additional thickness, without further loss.

"These conclusions are, however, only so far results of direct observation as that they are concluded from it by following out an empirical curve beyond its observed limits. Yet when we examine the amount of deviations the curve itself exhibits within those limits, and take into consideration the very simple apparent law of its curvature and course, it will be allowed that the conclusions partake at least of a very high probability, amply sufficient to warrant further research.

"Besides the simultaneous observations on the Faulhorn and at Brientz, Mr. Forbes has stated in this paper the results of a great many other actinometric days' work, which go to show—1st, that the instrument really is one which (its use being fully understood) gives highly consistent and dependable results; 2ndly, that its indications are in a most remarkable manner, and instantaneously affected by changes in the opacity of the atmosphere; 3rdly, that in a great number of comparisons between its indications on the summit of the Faulhorn with those simultaneously, or nearly so, at a variety of lower stations, there occurs not one in which the loss of heat between the stations is not a very large, distinct and easily measurable quantity.

"Mr. Forbes says nothing in this paper of the *qualities* as distinct from the quantities and *chromatic* properties or indices of transmissibility of the heat stopped in the upper regions of the air. But independent of any considerations of this nature (which however may materially affect the relations of vegetation to altitude in mountainous districts), I am disposed to regard this paper as marking a considerable epoch in that department of meteorology which relates to the introduction and distribution of heat among the strata of our atmosphere, and as likely to be the forerunner of very extensive and elaborate researches in further prosecution of the subject."

* After the classification of organic substances under compound radicals, no feature in the recent progress of chemistry is more remarkable than the

Having now performed this, the most agreeable duty of a President, I have the satisfaction to inform you, that Mr. Dollond has been so kind as to favour us with a bust of his grandfather, John Dollond. This memorial of one to whose ingenuity astronomy has been so deeply indebted, will form a valuable addition to our gallery of illustrious men. I am also able to congratulate the Society on the acquisition made this day of a bust of the justly celebrated James Watt, for which we have to give our most grateful thanks to his son. When we contemplate the features represented with so much spirit by a Chantrey, and copied so faithfully by a Hoffernan,

vast additions of new compounds produced by the application of artificial agencies to existing organic products. To this progress M. Dumas has greatly contributed by fixing attention on the removal of one element by another, which occurs in these reactions, and in particular to the equivalent substitution of chlorine for hydrogen, which has been successfully executed in a variety of substances by M. Dumas himself, and by others whom his discoveries and speculations have drawn into this fruitful field of research. The preservation of certain fundamental properties in the new compounds thus produced, he has referred to the existence of a peculiar arrangement of the constituent atoms in a compound, which arrangement is supposed to be preserved on the removal of one atom, or successive removal of several atoms, and their replacement by an equal number of atoms of a different element, and is expressed by the "chemical type."

In M. Dumas's first memoir on Chemical Types, his views are illustrated by the discovery of *chloro-acetic acid*, a remarkable substance, and highly interesting in its composition, being an acetic acid (vinegar), of which the whole hydrogen has disappeared, but is replaced by an equivalent quantity of chlorine. In this paper, also, he first forms "marsh gas" by an artificial process, and shows its relation to the acetates. He also forms a series of compounds by the action of chlorine upon marsh gas or "the gas of the acetates."

The second memoir of the series makes known the action of hydrated potass upon the alcohols, and furnishes a new and simple method of procuring the acid equivalent to a given alcohol. Thus acetic acid is alcohol, in which two atoms of hydrogen are replaced by two atoms of oxygen, and that acid is shown to be produced by the action of hydrate of potass upon alcohol at a high temperature, with the evolution of hydrogen gas. To estimate the value of these discoveries, it is necessary to bear in mind the importance lately acquired by the bodies of which common alcohol is the type. To discover or characterize a body as an alcohol, is to enrich organic chemistry with a series of products analogous to those which are presented in mineral chemistry by the discovery of a new metal. M. Dumas then applies this new method to other alcohols, and obtains by it formic acid from wood-spirit, ethalic acid from the ethol of spermaceti, and valerianic acid from the oil of potatoes.

In the third memoir, M. Dumas, in conjunction with E. Pelégat, describes certain new compound ethers, containing carbonic acid, one of which is remarkable for its analogy to sugar in its composition.

In addition to this series, M. Dumas, in conjunction with M. Hasfone, one of his numerous pupils, has given to the world the results of an elaborate investigation of the atomic weight of carbon, in which, independently of the importance of the analytical result obtained, certain defects of the method of organic analysis universally practised are first pointed out, and a degree of exactness and precision communicated to the process which it

we shall remember a man who by his talents conferred the greatest benefits on the civilized world,—who endowed inanimate machinery with the means of rapidly passing over the greatest distances by land, and of overcoming the force of adverse winds upon the ocean, —who brought to perfection the most important mechanical power with which man is yet acquainted, if indeed we are ever to see it surpassed: finally, a man who united the science of the profound philosopher to the ingenuity of the original inventor.

I am sure that the Society will unite with me in the expression

has never before possessed. The Council consider these researches relating to atomic weights, which he has since extended to other elements besides carbon, as highly interesting and as greatly enhancing the claim of M. Dumas, derived from his memoirs on chemical types, to the distinction of the Society's Copley Medal. That claim he has again increased by the more recent investigations he has undertaken of the most delicate and important nature, in the two several departments of inorganic and organic chemistry.

The first of these embraces the analysis of air, and the composition of water; inquiries remarkable for the novelty and exactness of the methods of analysis, the time and pains bestowed upon them, and the minute accuracy of the results. These new analyses now form the most fundamental determinations in the science. The superior accuracy of M. Dumas's analysis of water may be estimated from the circumstance, that while, by the last determinations lately received, namely, those of Berzelius and of Dulong, the proportion of oxygen to 1000 parts of hydrogen was ascertained only between the limits of 7936 and 8042, the new determinations limit the proportion of oxygen betwen 8000 and 8003. While the old determinations also were deduced from no more than three analyses, the new determinations are deduced from nineteen separate operations. The exactness introduced by M. Dumas into the analysis of air is equally remarkable, and the ultimate result is deduced from not less than one hundred elaborate analyses of air made by that chemist and his pupils during various seasons of the year and in different quarters of the globe.

In the same inquiry, the object of which is to furnish chemists with analytical constants of the highest attainable numerical accuracy, are included new determinations of the atomic weights of several other elements besides oxygen, hydrogen and nitrogen, the elements of air and water; particularly of carbon, to which reference has already been made. These results possess peculiar interest, from confirming a theory which was promulgated many years ago by Dr. Prout, and uniformly supported since its publication by several chemists of this country, although not assented to abroad; namely, that the atomic weights of all other elements are whole numbers, or are multiples of hydrogen. This law M. Dumas has lately extended to chlorine, silver, lead, calcium, potassium and sodium.

The new researches of the same chemist in the department of organic chemistry have reference to the composition of the great alimentary principles of the animal economy; namely, albumen, fibrin, casein and gelatin, with their origin in plants, and also the origin of the fat of animals. The memoir which contains these inquiries is a model of chemical research, equally remarkable for its extent, accuracy and completeness.

The recent discoveries of M. Dumas have procured for their author, in his own country, the high distinction of President of the French Academy, and of being the successor of Lacroix as Dean of the Faculty of Sciences in the University of Paris.

of heartfelt sorrow that the services of Mr. Roberton have been lost to us by his sudden and lamented death. His attention to his duties, his zeal for the honour and interest of our Society must have been apparent to you all, and especially to those who have formed part of our Council; but his merits were of course still better known to the more permanent officers of your body, and they entirely concur with me in this inadequate testimony of our regret.

Turning our attention to the obituary of the last year, I shall now proceed to read it to you, premising that we have been too recently acquainted with the death of M. Bouvard, Jun. to enable us at present to give any account of his life and labours.

His Royal Highness Prince Augustus Frederick, Duke of Sussex, Earl of Inverness, and Baron of Arklow, Knight of the Garter, and Grand Master of the Order of the Bath, was born on the 27th of January, 1773.

In early life he joined the Whig party in politics, and adhered to it till his death. No one doubted the sincerity of his opinions; indeed, he must have made personal sacrifices that would forbid the possibility of any one's doubting that they were the real convictions of his mind. The decided nature of his sentiments was unaccompanied and unobscured by any shade of bitterness, and he gave that charitable interpretation to the motives of those with whom he differed, that he expected for his own. The eulogiums pronounced upon him, after his death, by the Duke of Wellington and Sir Robert Peel, are, indeed, as honourable to them as it is to him of whom they spoke. The active part of his life, however, was little occupied by the concerns of party; it was rather dedicated to those interests, where happily there is in this country no party, or rather, where all are more or less of the same party. It was in increasing the funds by which the wants of the orphan and widow are relieved, by which the sick are cured, and the ignorant are instructed, and by which comfort is given to every species of destitution, that his late Royal Highness seems chiefly to have delighted. Next to this was his interest in intellectual pursuits: he collected a noble library, especially rich in Biblical Literature, which was the more prized by him from his acquaintance with the Hebrew language.

He was fond of mechanics, and left at his decease a large collection of clocks and time-pieces, a taste for which he apparently inherited from his father, George the Third. He was for many years President of the Society for the Encouragement of Arts, Manufactures and Commerce, a Society that has done much to encourage mechanical ingenuity. Finally, he evinced his regard for natural science, by presiding for several years over our Society, in whose concerns he would probably have taken a more active part but for the affection of his eyes, by which he was for some years deprived partially or wholly of the blessing of sight; a blessing, which was, however, in a great degree, restored to him by the skill of Mr. Alexander. Those Fellows of the Society who are Free-

masons, would not be satisfied did I not allude to His Royal Highness's connexion with that body, of which he was during the latter portion of his life Grand Master. In private society, the Duke of Sussex was kind and affable, and fonder of domestic happiness than of the state and pomp of his exalted rank. On this point, however, I shall not dilate, as the address of a President of a public body has more to do with the public conduct than with the private virtues of those about whom he speaks. Suffice it to say, that when His Royal Highness departed this life, having many public and private friends, there probably was no one who was his enemy. He died on the 21st day of April, at the age of seventy.

William Lord Fitzgerald and Vesey died on the 11th day of last May. His father was the Right Honourable James Fitzgerald, Prime Serjeant of Ireland. He passed a great part of his life in the public service of his country. In 1809, he was a Lord of the Treasury and a Privy Councillor in Ireland. In 1812, he became Chancellor of the Exchequer and First Lord of the Treasury in Ireland. He was subsequently sent by the British Government on a diplomatic mission to Sweden. At still later periods of his life, he held the offices of Paymaster-general of the Forces, of President of the Board of Trade, and of Treasurer of the Navy. On the appointment of Lord Ellenborough as Governor-general of India, Lord Fitzgerald succeeded to the situation of President of the Board of Control. These various employments left him little time for other than political pursuits; but his acceptance of the Presidentship of the Institute of Irish Architects, proves his attachment to that branch of the fine arts which is most intimately connected with science. He was a man of agreeable manners and cultivated understanding, and an impressive and able, if not a very frequent speaker in Parliament. He was in delicate health when he accepted his last public employment, and it is to be feared that the harassing fatigues of office shortened his valuable life.

Dr. John Latham was born in the year 1761. Early in life he was appointed Physician to the Infirmary at Manchester, where he remained three years; and afterwards removed to Oxford, and succeeded Dr. Austin as Physician to the County Hospital. He finally settled in London, and obtained, in succession, the appointments of Physician to the Magdalen Hospital, the Middlesex Hospital, and lastly to St. Bartholomew's Hospital. He rapidly rose to eminence in his profession; but the labours by which he earned these successes had undermined his constitution; and, at the age of 46, his career was arrested by serious threatenings of consumption, which compelled him, for a time, to abstain from exertion and to seek health in the retirement of the country. Contrary to all expectation he recovered, and was enabled to resume his practice in London, which he continued for twenty years longer.

Dr. Latham did not contribute any paper to the Philosophical Transactions; but was the author of several memoirs on practical

subjects in the Medical Transactions of the College. In 1809, he wrote a small volume, entitled "Facts and Opinions concerning Diabetes." In 1814, he was chosen President of the College of Physicians. The Medical Benevolent Society was founded by him in 1816.

In 1829, having reached his 68th year, Dr. Latham finally left London: he died in April last, in his 82nd year, worn out by severe and protracted suffering.

CHARLES MACINTOSH, an eminent chemist, was born at Glasgow in the year 1766. His father, George Macintosh, a native of Rossshire, was a merchant in that city; and his mother was Mary Moore, daughter of the Rev. Charles Moore, minister of Stirling. Mr. George Macintosh first introduced the process of dyeing the Turkey, or Adrianople red into Britain, and was much esteemed by his fellow citizens for his charitable disposition and active benevolence. Charles Macintosh's paternal uncle, William Macintosh, obtained some notoriety about the year 1782, by the publication of Travels in the East, in which he first propounded the greater part of those principles of legislation which have since been adopted in the government of our Indian Empire; and his maternal uncle was Dr. John Moore, the well-known author of 'Zeluco' and other literary works of eminence, and father of the celebrated General Sir John Moore.

Charles Macintosh received the rudiments of his education at the Grammar-school of Glasgow, where he was distinguished for docility of disposition and quickness of parts. From Glasgow he was removed to a school at Catterick in Yorkshire; but, being destined for mercantile life, he was early placed in the counting-house of Mr. Glasford at Glasgow, then one of the first merchants of the day, where he probably acquired that accuracy in the transaction of business details for which he was in after-life remarkable. From a strong bent towards the pursuit of science, he also about this time, 1782, became a student in the University of Glasgow, and for several sessions attended the chemical lectures of the celebrated Dr. Black. It would appear that Black had remarked his assiduity and aptitude for the study of chemistry, for he was accustomed to detain young Macintosh after the dismissal of the evening classes, and, walking with him to and fro in the cloisters of the old court of the University, he examined him strictly on the subject of his previous prelections; directing his attention to points of importance, and explaining those of difficulty in the science as it then stood. When Dr. Black was removed to Edinburgh, Macintosh became the pupil of his successor Irvine, with whom he soon became as great a favourite as he had been with Black. Whilst as yet a mere boy he contributed to Curtis's 'Flora Londinensis' the account of some experiments on the culture of woad and madder, and on the mode of dyeing with the same. He seems at this time to have been also a botanical student of the University, and to have made many excursions in the neighbourhood of Glasgow in search of specimens;

but it was in the branch of chemical investigation that he was destined to become more conspicuous. The experiments which he afterwards made in the application of incinerated Algæ, as a manure, and which are related by Dr. Greville in his account of the British Algæ, come more under the head of chemical than of botanical research. In order to perfect him in a knowledge of the French language, the subject of this notice was afterwards removed to the house of a Catholic clergyman in Champagne, with whom he resided for some time, and acquired a facility in speaking and writing French, which he retained through life.

Before he returned to Scotland he visited Brussels, and was much noticed by Count Lockhart, the Austrian Viceroy of the Netherlands. From Brussels he ascended the Rhine in company with an English artist named Green, who was making a professional tour, and who afterwards acquired some celebrity as a landscape painter in water-colours, an art then in its infancy. At Weimar he made the acquaintance of the illustrious Goethe; and, having visited Berlin, he came to Paris shortly before the breaking out of the Revolution in 1789.

As Mr. Macintosh's pecuniary circumstances did not admit of his continuing unemployed, at the time of his return to Scotland several schemes for his future career in life appear to have attracted his attention. He was at one period upon the point of embarking as a planter for the West Indies, and had actually entered upon negociations with the Hudson's Bay Company to retrace the steps of the adventurous Hearne to the shores of the polar ocean, with the view of extending the Company's fur trade beyond the Rocky Mountains. His love for chemistry induced him, however, to relinquish these schemes, and, as the result, his establishment of various branches of chemical manufacture, including those of acetate of lead, hitherto in Britain altogether an import from Holland; of acetate of alumina, so extensively employed by our calico-printers; of alum, before his time unknown as a manufacture in Scotland, and whereby he converted the exhausted and deserted coal-works in the neighbourhood of Campsie and Hurlet, near Glasgow, into a scene of great and active commercial enterprise; of Prussian blue, and of prussiate of potash, as the mode of dyeing woollen, cotton and silk (with which latter salt he was also the sole inventor), followed each other in rapid succession. He was also the inventor of the process for manufacturing the dry chloride of lime, which effected an entire revolution in the process of bleaching, and which gave origin to the stupendous chemical works at St. Rollox, near Glasgow, which have since become so celebrated under the energetic management of the Messrs. Tennants.

It had been known to chemists that naphtha, or petroleum, was a solvent for caoutchouc, or the coagulated juice of the *Iatropa Elastica*, the *Urceola Elastica*, and other tropical plants. The liquid varnish, however, thus formed, although elastic, continued clammy and viscid when exposed to the air of the atmosphere. Mr. Macintosh overcame this difficulty by the formation of double fabrics, having the varnish as an adhesive waterproof film or medium in the

centre. It is unnecessary to enlarge upon the great utility of this invention, followed as it has been by the removal of many of the difficulties which had rendered caoutchouc a substance impracticable to manage, so as now to admit of its application to many useful purposes in the arts. Mr. Macintosh was also the inventor of a mode of converting iron into steel by the application of coal-gas in hermetically closed and heated vessels; a beautiful process, by which much time and labour is saved.

The desire of acquiring useful information continued with Mr. Macintosh to be a ruling passion; in instance of which it may be mentioned, that when he placed his sons as students at the University of Glasgow in the year 1805, he again re-entered himself as a student, and regularly attended the lectures in Natural Philosophy of the now venerable Professor Meikleham; and still later in life, when his friend Dr. Thomas Thomson was appointed Professor of Chemistry at Glasgow, in 1818, Mr. Macintosh again became a student, and regularly attended two courses of the Professor's lectures. Latterly, Mr. Macintosh had resided for the most part in comparative retirement in the country, where he took much interest and pleasure in planting and improving his estate of Campsie. For several years his health had been gradually declining, and he at length expired at his house at Dunchattan, near Glasgow, on the 25th day of July, 1843. His end, for which he was quite prepared, was characterized by the most perfect resignation, fortitude and composure, and in unison with the virtuous and useful life which he had led.

Mr. Macintosh married, in 1789, Miss Mary Fisher, the daughter of Alexander Fisher, Esq., merchant in Glasgow, and whose ancestors were the possessors of the Barony of Cowden Knows, in Selkirkshire, renowned in Scottish song, and commemorated in the pages of Rousseau.

Robert Alexander, Esq., was born at Halifax, in Yorkshire, on the 18th of January, 1795, and was the son of Lewis Alexander, Esq., of Hopwood, near that town. He was educated at the flourishing Grammar-school of Hipperholm, and in due time was entered as a student at Lincoln's-inn. In Michaelmas Term, 1820, he was called to the bar, and immediately fixed on the Northern Circuit as the scene of his future professional career. Here he greatly distinguished himself, though surrounded by rivals of the highest talents and eminence, and gradually attained, by his ability, his industry, and his perseverance, the highest station. At the unusually early age of 40, he was raised to the rank of King's Counsel, and, had his life been spared, would probably at some future time have enjoyed the still higher honours of his profession. Unhappily his labours appear to have undermined his constitution, and he died on the 21st of last February, at the age of 48. He was married in 1829 to Miss Legard, but left no children. In 1835, he was elected a Fellow of the Royal Society, an honour of which he always spoke with the greatest pride, and to which he alluded with pleasure to the latest period of his life.

The late ARCHDEACON WRANGHAM, when a student at College, gained the highest classical honours of the University, and was distinguished in after life for the correctness of his scholarship and for the refined taste and elegance of his classical compositions: there are few departments of our literature which he has not enriched by his writings; and throughout a long and useful life, his lively and instructive conversation, his refined and amiable manners, and his upright and consistent character, secured him the affectionate attachment of a large circle of friends, including the most eminent men of his day.

The Address of the President was ordered to be printed.

The Statutes relating to the election of Council and Officers having been read by the Secretary, and Joseph Smith, Esq. and Capt. Grover having, with the consent of the Society, been nominated Scrutators in examining the lists, the votes of the Fellows present were collected.

Dr. Roget, on the part of the Scrutators, reported the following Gentlemen as being duly elected Officers and Council for the ensuing year, viz.—

President.—The Marquis of Northampton.

Treasurer.—Sir John William Lubbock, Bart., M.A.

Secretaries. { Peter Mark Roget, M.D.
Samuel Hunter Christie, Esq., M.A.

Foreign Secretary.—John Frederic Daniell, Esq.

Other Members of the Council.—Martin Barry, M.D.; William Bowman, Esq.; Sir Thomas M. Brisbane, K.C.B.; Henry James Brooke, Esq.; Robert Brown, Esq., D.C.L.; William F. Chambers, M.D., K.C.H.; George Dollond, Esq.; Thomas Graham, Esq., M.A.; John Thomas Graves, Esq., M.A.; Robert Lee, M.D.; William Hallows Miller, Esq., M.A.; Roderick Impey Murchison, Esq.; Richard Owen, Esq.; Jonathan Pereira, M.D.; Captain James Clark Ross, R.N.; James Walker, Esq.

The thanks of the Meeting were given to the Scrutators for their trouble in examining the lists.

The following is the statement of the Receipts and Payments of the Society during the preceding year, which was laid on the table by the Treasurer:—

Statement of the Receipts and Payments of the Royal Society between Nov. 29, 1842, and Nov. 29, 1843.

RECEIPTS.

	£	s.	d.
Balance in the hands of the Treasurer at the last Audit ..	1145	3	5
23 Weekly Contributions, at one shilling 59 16 0			
226 Quarterly Contributions at £1..... 878 0 0			
	937	16	0
Carried forward....	2082	19	5

	£	s.	d.	£	s.	d.
Brought forward....				2082	19	5
23 Admission Fees				230	0	0
3 Compositions for Annual Payments at £40				120	0	0
9 Compositions for Annual Payments at £60				540	0	0
Received of Messrs. Ranking on account of the Pacha of Egypt:—						
February 4	156	16	0			
February 17	67	19	0			
October 21	67	18	0			
October 27	38	0	0			
				330	13	0
Rents:—						
One year's rent of estate at Mablethorpe: due at Michaelmas 1843	£ 107	s. 0	d. 0			
Tithe	0	18	0			
	107	18	0			
Less Tithe 19 0 0						
Income Tax .. 4 14 0	23	14	0			
	84	4	0			
One year's rent of lands at Acton: due at Michaelmas 1843	70	0	0			
One year's fee-farm rent of lands in Sussex; land-tax deducted: due at Michaelmas 1843	19	4	0			
One-fifth of the clear rent of an estate at Lambeth Hill, from the Royal College of Physicians, in pursuance of Lady Sadleir's will: due at Midsummer 1843	3	0	0			
				176	8	0
Dividends on Stock:—						
One year's dividend on £14,000 Reduced 3 per cent. Annuities	420	0	0			
Less Income Tax	12	5	0			
				407	15	0
One year's dividend on 3452*l.* 1*s.* 1*d.* Consols, the produce of the sale of the premises in Coleman-street	103	11	2			
Less Income Tax	3	0	4			
				100	10	10
One year's dividend on £200 Consols	6	0	0			
Less Income Tax	0	3	6			
				5	16	6
Donation Fund.						
One year's dividend on £4843 14*s.* 7*d.*	145	6	2			
Less Income Tax	4	4	10			
				141	1	4
Carried forward....				4135	4	1

	£	s.	d.	£	s.	d.
Brought forward....				4135	4	1
Rumford Fund.						
One year's dividend on 2292*l.* 11*s.* 7*d.* Consols	68	15	6			
Less Income Tax	2	0	0			
				66	15	6
Fairchild Fund.						
One year's dividend on £100 New South Sea Annuities				3	0	0
Sir Clifton Wintringham's Bequest.						
One year's dividend on £1200 Consols	36	0	0			
Less Income Tax	1	1	0			
				34	19	0
Miscellaneous Receipts:—						
Mr. Amyott, Treasurer of the Society of Antiquaries: for blinds in Ante-room				0	16	3
Sale of Philosophical Transactions, Abstracts of Papers, and Catalogues of the Royal Society's Library				212	2	6
Sale of Scientific Catalogues to Subscribers and old Catalogues.....				1	18	6
Total Receipts.....				4454	15	10

PAYMENTS.

	£	s.	d.
Fairchild Lecture.—The Rev. J. J. Ellis, for delivering the Fairchild Lecture for 1843	3	0	0
Bakerian Lecture.—Charles Wheatstone, Esq., for the Bakerian Lecture for 1843	4	0	0
Rumford Fund.—William H. Fox Talbot, Esq., two years' dividends on the Augmentation Fund, 1842	72	11	0
Donation Fund.—Powell: for Microscope, as per advertisement.....	100	0	0
Books purchased:	£	s.	d.			
Dulau and Co.: for Books	13	15	3			
Bailliere: for ditto	30	0	0			
Weale: for ditto	4	6	0			
Taylor: for ditto	12	10	0			
John Gould, Esq.: (Birds of Europe)....	60	0	0			
				120	11	3
Carried forward....				300	2	3

	£	s.	d.	£	s.	d.
Brought forward....				300	2	3
Sums paid on account of the Pacha of Egypt:—						
Jones: for magnetical instruments....	135	0	0			
Parkinson and Frodsham: for chronometer	50	0	0			
Molyneux: for ditto	45	0	0			
Newman: for meteorological instruments	38	0	0			
Barrow: for dipping needle	40	14	0			
Dollond: for transit	75	15	0			
Dent: astronomical clock.....	81	0	0			
Shipping charges, &c., by petty charges	6	18	0			
				472	7	0
Salaries:—						
Dr. Roget, one year, as Secretary	105	0	0			
S. H. Christie, Esq., one year, as Secretary..	105	0	0			
Ditto for Index to Phil. Trans.	5	5	0			
John F. Daniell, Esq., one year, as For. Sec.	20	0	0			
Mr. Roberton, one year, as Assistant-Secretary	200	0	0			
Mr. W. E. Shuckard, one year, as Librarian..	50	0	0			
Mr. Holtzer, one year, as Porter.....	30	0	0			
Ditto, for extra Porterage	10	0	0			
				525	5	0
Few, Hamilton and Few, Solicitors:						
Law Expenses				3	11	8
Fire Insurance, on the Society's Property				45	1	6
Mrs. Coppard: Gratuity.....				10	0	0
Mr. Shuckard, for completion of Catalogue				100	0	0
Bills:—						
Taylor:						
Printing the Phil. Trans., 1842, part 2 ..	118	13	6			
Ditto, 1843, part 1.....	72	10	0			
Ditto, Proceedings, Nos. 55—57; Circulars, Lists of Fellows, Ballot-lists, Statement of Payments, and Minutes of Council; &c. &c.	155	2	6			
				346	6	0
Bowles and Gardiner:						
For Paper for the Phil. Trans., 1842, part 2,	62	10	0			
and 1843, part 1	32	10	0			
				95	0	0
Basire:						
For Engraving and Copper-plate printing for Phil. Trans., 1843, part 1 and 2, &c.	122	13	10	122	13	10
Carried forward....				1897	13	5

	£	s.	d.	£	s.	d.
Brought forward....	122	13	10	1897	13	5
Walker:						
Ditto, 1843, part 1.....	6	9	9			
Ditto, 1843, part 2.....	30	7	6			
				159	11	1
Gyde:						
Boarding and Sewing 800 Parts of Phil. Trans., 1842, part 2	27	5	4			
Ditto, 1843, part 1.....	27	5	4			
Ditto, 400 of vol. iv. of the Proceedings..	12	5	10			
				66	16	6
Tuckett:						
Bookbinding	73	12	6			
Pouncey and Sons:						
For Stationery	9	17	3			
Saunderson:						
For Shipping Expenses	8	5	8			
Brecknell and Turner:						
Wax Lights, Candles, and Lamp Oil	33	4	6			
Arnold:						
For Coals	23	4	0			
Ditto (Porter's yearly allowance)	4	7	0			
Newman:						
Repairing instruments, æther, &c.....	4	6	0			
Troughton and Simms:						
Repairing instruments	9	9	0			
Murray:						
For taking Meteorological Observations	5	0	0			
Gwillim:						
Mats, Brushes, Fire-wood, &c.	5	6	2			
Cubitt:						
For repairs and relaying Carpets, &c.....	20	1	7			
Cardinal;						
Turkey carpets	43	10	0			
Clerks: Christmas Fee.....	1	1	0			
				241	4	8
Taxes and Parish Rates:						
Land and Assessed Taxes	21	14	1			
Poor Rate	8	10	0			
Church Rate	4	5	0			
Rector's Rate.....	1	8	4			
Sewer's Rate	2	2	6			
Income Tax	4	19	2			
				42	19	1
Petty Charges:						
Postage and Carriage.....	10	18	1			
Expenses on Foreign Packets, &c.....	4	15	6			
Carried forward....	15	13	7	2408	4	9

	£	s.	d.	£	s.	d.
Brought forward....	15	13	7	2408	4	9
Stamps	1	16	6			
Charwoman's Wages	25	14	6			
Ditto, Extra work	2	12	6			
Miscellaneous expenses	9	19	5			
Library and Window-cleaning, &c.	2	0	0			
Advertisements	1	5	6			
	59	2	0			
Less charged to the Pacha of Egypt	6	18	0	52	4	0
Balance in the hands of the Treasurer				1994	7	1
Total....				£4454	15	10

JOHN W. LUBBOCK, *Treas.*

Nov. 29th, 1843.

The Balances in hand, now belonging to the several trusts, are as under: viz.—

	£	s.	d.
Donation Fund	136	9	5
Rumford Fund	66	15	6

The following table shows the progress and present state of the Society with respect to the number of Fellows:—

	Patron and Honorary.	Foreign.	Having compounded.	Paying £2 12s. Annually.	Paying £4 Annually.	Total.
November 1842....	13	50	516	24	222	825
Since elected.....			+ 11	.....	+ 12	+23
Since compounded	.....	.....	+ 1	.....	— 1	
Defaulters	.....	.....	.....	.....	— 3	—3
Since deceased	— 1	— 1	— 8	— 1	— 4	—15
November 1843....	12	49	520	23	226	830

Weekly and Quarterly Contributions.

1830.....	£363	4	0	1837.....	531	0	0
1831.....	286	0	0	1838.....	599	4	0
1832.....	255	6	0	1839.....	666	16	0
1833.....	283	7	6	1840.....	767	4	0
1834.....	318	18	6	1841.....	815	12	0
1835.....	346	12	6	1842.....	910	8	0
1836.....	495	0	0	1843.....	933	16	0